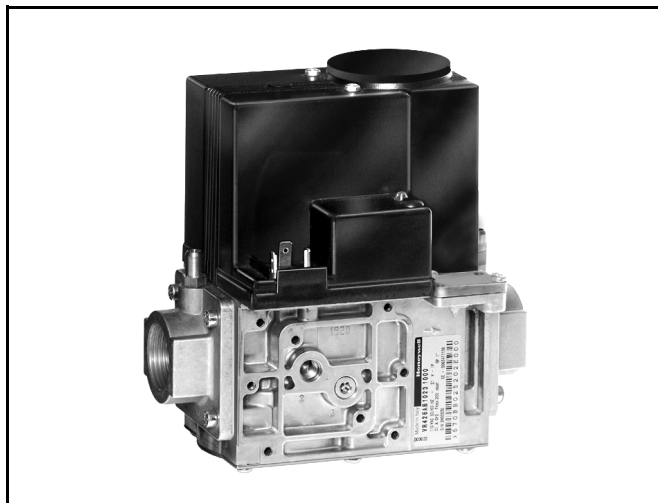


VR415; VR420; VR425 Class A Double Block Valves

PRODUCT DATA



FEATURES

- Class A double block for control of gaseous fuels in gas consuming appliances in accordance with international standards.
- Main body with two single-seat shutoff valves.
- Provides for mounting optional flanged pressure switches.
- Closing time: < 1 second.
- Coils suitable for permanent energization.
- Fine mesh screen (strainer) between inlet flange and main body.
- Various pressure tap points at main body available, when no additional valves or pressure switches are used.
- Plug connector according to DIN 43650.
- CSA Rated for 1/2 psi (34.5 mBar).
- Maximum operating pressure 2.9 psi (200 mBar).

APPLICATION

The VR415/VR420/VR425 Class A Double Block Valves are used for control of gaseous fuels in gas-fired power burners, atmospheric gas boilers, ovens, furnaces, incinerators, roof-top units, makeup air units and other gas consuming appliances.

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SPECIFICATIONS

The specifications in this section are related to the main valve. The valve must be used in combination with a burner control.

Model:

VR415NA1001 1/2 in. (13 mm).
 VR420NA1004 3/4 in. (19 mm).
 VR425NA1009 1 in. (25 mm).

Pipe Size: Inlet and outlet straight flange connection.

Capacity: See Table 1 for capacity curves.

Table 1. Gas Capacity (cfh).

Valve Model	Capacity (cfh), 0.64 sp. gr. gas @ 1 in. w.c. Δ P
VR415	185
VR420	300
VR425	425

Maximum Operating Pressure:
 2.9 psi (200 mbar).

NOTE: CSA certifies for 1/2 psi (34.5 mbar).

Connections:

1/8 in. (3 mm) pressure taps at inlet and outlet flanges. Eight flange connections are provided at the main body to mount either a pressure switch (low or high) or a Valve Proving System (VPS).

Torsion and Bending Stress: Pipe connections meet EN161, Group 2, requirements.

CSA Certificate Number: 158158-1227192.

Valve Classification: Class A + A, per EN 126/EN 161.

Supply Voltage: 120 Vac (+10%, -15%), 50/60 Hz (±10%).

Electrical Equipment: Dc current coils with combined rectifier inside the cover.

Electrical Connection: Standard DIN plug connector.

Ambient Temperature Range: 5°F to 140°F (-15°C to +60°C).

Coil Insulation Solenoid Valves: Class F insulation material.

Enclosure: IP 54 (NEMA 3).

Body Material: Aluminum alloy, die cast.

Strainer: Fine mesh screen (.0135 in. [0.34 mm] diameter), AISI 303 steel, serviceable after removing inlet flange screws. Meets EN 161 requirements for strainers.

Seals and Gaskets: Hydrocarbon resistant NBR and Viton rubber types.

Flange Kit: Consists of one flange with sealing plug, 1 O-ring and four screws.

Table 2. Power Consumption in Watts at 120 Vac.

Model	V1 + V2	
	W	mA
VR415	32	150
VR420	32	150
VR425	38	180

Opening Time:

Dead time maximum: 1 second.
 First valve opening: < 1 second.
 Second valve opening: < 1 second.

Maximum Allowable Leakage:

Outerwall: 3 cu. in./hr (50 cm³/h) at test pressure of 0.087 psi (6 mbar) and 7.83 psi (540 mbar).
 First valve: 2.4 cu. in./hr, (40 cm³/h) at test pressure of 0.087 psi (6 mbar) and 7.83 psi (540 mbar).
 Second valve: 2.4 cu. in./hr (40 cm³/h) at test pressure of 0.087 psi (6 mbar) and 7.83 psi (540 mbar).

High Pressure Test: In the Off condition, the valve will withstand 21.75 psi (1.5 bar) inlet pressure without damage.

NOTE: Attempts to operate the valve while in this condition will not cause damage.

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Home and Building Control Sales Office (check white pages of your phone directory).
2. Home and Building Control Customer Relations
 Honeywell, 1885 Douglas Drive North
 Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Scarborough, Ontario M1V 4Z9.

International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

Closing Time: Less than 1 second for all valves.

Maximum Working Frequency: One cycle per minute.

Duty Cycle: Coil suitable for permanent energization in cooperation with ignition controller.

Operational Voltage Range: The combination gas valve will function satisfactorily between 85% and 110% of the rated voltage.

Design Life: 500,000 cycles.

Dimensions: See Fig. 1.

Approvals:

Gas Appliance Directive 90.396/EEC.

PIN: 0063AT1198.

Low Voltage Directive: 73/23/EEC.

Electro Magnetic Compatibility Directive: 89/336/EEC.

CSA: File: 158158-0001227192, Guide 3371-03, 3371-83.

Underwriters Laboratories, Inc. (UL):

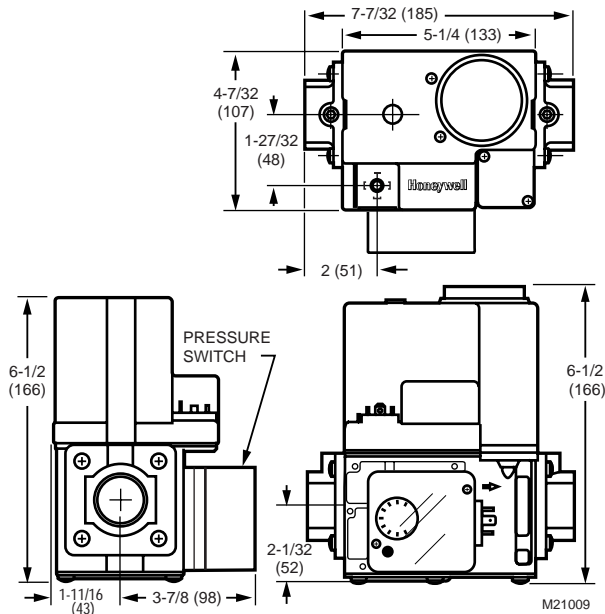


Fig. 1. Approximate dimensions of VR415/VR420 in in. (mm).

INSTALLATION

When Installing this Product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. The installer must be a trained, experienced flame safeguard technician.
4. After installation is complete, check out product operation as provided in these instructions.

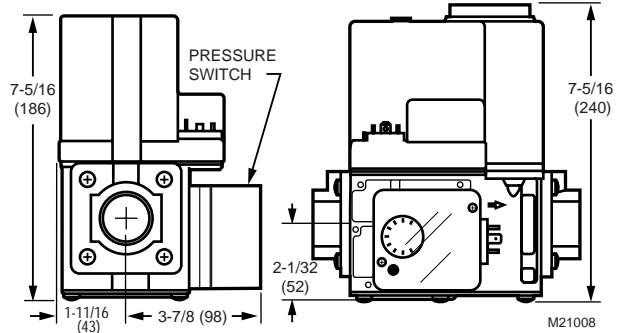
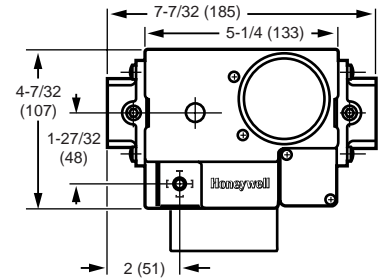


Fig. 2. Approximate dimensions of VR425 in in. (mm).

⚠ WARNING

Fire or Explosion Hazard.

Can cause serious injury, death or property damage.

1. Turn off the gas supply before beginning installation.
2. Disconnect power supply to the valve actuator before beginning installation to prevent electrical shock and damage to the equipment.
3. Do not remove the seal over the valve inlet and outlet until ready to connect piping.
4. The valve must be installed so that the arrow on the valve points in the direction of the gas flow, so that gas pressure helps to close the valve.

Mounting Position

The gas valve can be mounted plus or minus 90 degrees from the vertical.

Mounting locations

The distance between the gas valve and the wall/ground must be a minimum of 11-5/16 in. (30 cm).

Main Gas Connection

1. Take care that dirt does not enter the gas valve during handling.
2. Remove the flanges from the valves.
3. Use new, properly reamed, pipe, free from chips.
4. Do not thread pipe too far into valve. Valve distortion or malfunction can result from excess pipe in the valve.
5. Make sure O-ring sealing surfaces are clean.
6. Apply a moderate amount of good quality pipe dope, resistant to the action of liquid propane (LP) gas only on the pipe threads.
7. Screw the flanges onto the pipes.

8. Make sure that the inlet and out flanges are in line and separated from each other enough to allow the valve to be mounted between the flanges without damaging the O-ring.
9. Using general purpose lithium grease, grease the O-ring.
10. Mount the gas valve between the flanges, using the bolts and nuts for each flange.
11. Complete the electrical connections as instructed in the Electrical Connection section.

⚠ WARNING

Fire or Explosion Hazard.

Can cause property damage, severe injury or death.

Perform a soap and water solution leak test any time work is done on a gas system.

Electrical Connections

⚠ WARNING

Electrical Shock Hazard.

Can cause serious injury or death.

Disconnect the power supply before beginning wiring to prevent electrical shock.

Wiring

1. Use 14, 16 or 18 AWG copper conductor, 600 volt insulation, moisture-resistant wire for line voltage connections. Recommended part numbers are TTW60C, THW75C or THHN90C.
2. Follow the instructions supplied by the appliance manufacturer. See Fig. 6 and 7 for reference.

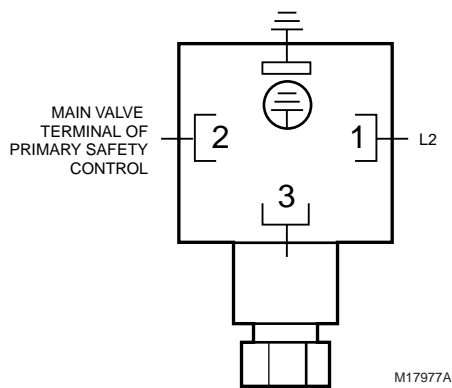


Fig. 3. Three-pin electrical plug connector.

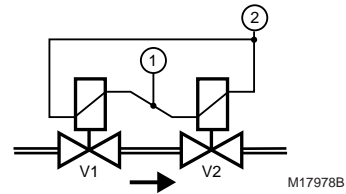


Fig. 4. VR425 electrical connection diagram.

ADJUSTMENTS AND FINAL CHECKOUT

The following procedures are related to the adjustments on the main gas valve. For adjustment of the other devices (i.e., pressure switches), refer to the instructions supplied with the applicable device.

⚠ WARNING

Fire or Explosion Hazard.

Can cause serious injury, death or property damage.

Only fully qualified, experienced flame safeguard technicians should make adjustments on the valve.

Pressure Tap Points (Fig. 5)

The VR415/VR420/VR425 has a number of connection points for measuring pressure and/or mounting a pressure switch.

The following pressures can be measured:

1. Inlet pressure—tap on inlet flange and on side of valve body (1,2).
2. Interim pressure—pressure between the two shutoff valves (3).
3. Outlet pressure—tap from flange (4).

The corresponding numbers (2, 3) can be found on the side of the valve.

NOTE: To mount the C6097 Pressure Switch, refer to instructions in form 65-0237, furnished with the switch.

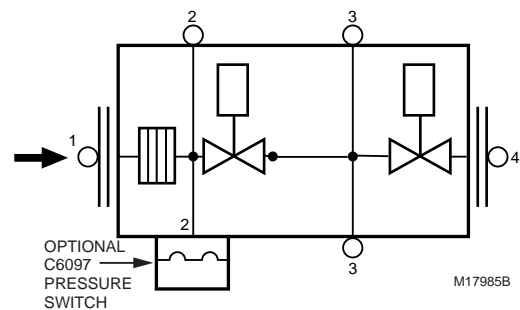


Fig. 5. Pressure tap points.

Final Checkout of the Installation

Set the system in operation after any adjustment is completed and observe several complete cycles to ensure that all burner components function correctly.

OPERATION

The VR415/VR420/VR425 are normally closed valves. The valves open when energized and close when the power is removed.

WARNING

Explosion Hazard and Electrical Shock Hazard. Can cause explosion, serious injury or death.

1. Do not put the system into service until you have satisfactorily completed the Valve Leak Test, all applicable tests described in the Checkout section of the instructions for the flame safeguard control and any other tests required by the burner manufacturer.
2. All test must be performed by a trained, experienced flame safeguard technician.
3. Close all manual fuel shutoff valves immediately if trouble occurs.

After the installation is complete, cycle the valve several times with the manual fuel shutoff cock closed. Make sure the valve functions properly. Also, perform the Valve Leak Test before putting the valve into service.

Valve Leak Test (Fig. 10)

This is a test for checking the closure tightness of the gas shutoff valve. It should be performed only by trained, experienced flame safeguard technicians during the initial startup of the burner system or whenever the valve is replaced. It is recommended that this test also be included in the scheduled inspection and maintenance procedures. For a periodic inspection test, follow steps 1, 3, 4, 5, 8, 9, 19, 12, 13, 16 and 17.

1. De-energize the control system to make sure no power goes to the valve (C, Fig. 10).
2. Close the upstream manual gas cock (A).
3. Make sure the manual test petcock (F) is closed in the leak test tap assembly (D).
4. Remove the leak test tap plug and connect the test apparatus to the leak test tap (D).
5. Close the downstream manual gas cock (E).
6. Open the upstream manual gas cock (A).
7. Run the valve to its open position (through the safety system); then immediately de-energize the system to close the valve.
8. Immerse an 1/4 in. (6 mm) tube vertically 1/2 in. (13 mm) into a jar of water.
9. Slowly open the manual test petcock (F).
10. When the rate of bubbles coming through the water stabilizes, count the number of bubbles appearing during a ten-second period. Each bubble appearing represents a flow rate of 0.001 cfh.

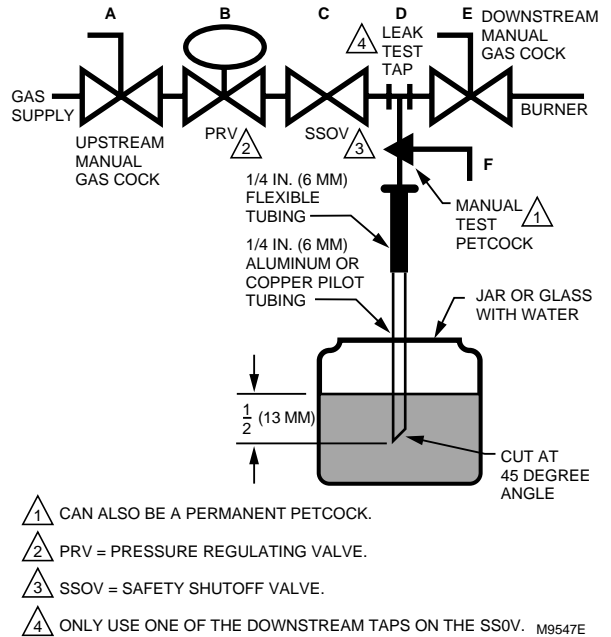


Fig. 6. Valve leak test.

After the Test

1. Close the upstream manual gas cock (A).
2. Close the manual test petcock (F), remove the test apparatus, and close the leak test tap (D).
3. Make sure the downstream manual gas cock (E) is closed.
4. Open the upstream manual gas cock (A) and energize the valve through the safety system.
5. Test with rich soap and water solution to make sure there is no leak at the test tap (D) or any pipe adapter/valve mating surfaces.
6. De-energize the valve (C).
7. Open the downstream manual gas cock (E).
8. Restore the system to normal operation.

TROUBLESHOOTING

WARNING

Electrical Shock Hazard.

Can cause serious injury or death.

Use extreme caution while troubleshooting; line voltage is present.

IMPORTANT

Do not replace the valve until all other sources of trouble are eliminated.

Troubleshooting Procedure

If the valve does not open when the thermostat or controller calls for heat:

1. Check for line voltage at the valve leadwires or terminal block.
2. If there is no voltage at the valve leadwires or terminal block, make sure:
 - a. line voltage power is connected to the master switch.
 - b. master switch is closed and overload protection (circuit breaker, fuse or similar device) has not opened the power line.
3. If there is still no voltage at the valve leadwires or terminal block, make sure all appropriate contacts in the thermostat or controller, limits and flame safeguard controls are closed. If one or more are open, determine the cause(s); correct the trouble and proceed.
4. If there is proper voltage at the valve but the valve still does not open, check for normal gas pressure.
5. If the valve still does not open, replace the valve.

If the valve does not close when one or more of the appropriate contacts in the thermostat, controller, limits or flame safeguard control is open:

1. Make sure the valve is wired in the correct circuit.
2. Open the master switch to remove power from the valve.
3. If the valve closes now, check the wiring for the valve and correct the wiring as necessary.
4. Check for a short in the electrical circuit and repair it as necessary.

SERVICE INFORMATION

WARNING

**Explosion Hazard and Electrical Shock Hazard.
Can cause explosion, serious injury or death.**

Turn off gas supply and disconnect all electrical power to the valve before servicing.

IMPORTANT

Only trained, experienced flame safeguard control technicians should attempt to service or repair flame safeguard controls and burner assemblies.

Scheduled Inspection and Maintenance

Set up and follow a schedule for periodic inspection and maintenance, including the burner, all other controls and the valves. It is recommended that the valve leak test in the Checkout section be included in this schedule. Refer to the instructions for the primary safety control(s) for more inspection and maintenance information.

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